MARICOPA ASSOCIATION of GOVERNMENTS

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May 28, 2008

TO: Members of the MAG Specifications and Details Committee

FROM: Robert Herz, Maricopa County DOT, Chairman

SUBJECT: MEETING NOTIFICATION AND TRANSMITTAL OF AGENDA

Wednesday, June 4, 2008 at 1:30 p.m.
MAG Office, Second Floor, Cholla Room
302 North First Avenue, Phoenix

The meeting of the MAG Specifications and Details Committee will be held at the place and time indicated above. The agenda for the meeting is provided below. **Please park in the garage under the building. Bring your ticket to the meeting, parking will be validated. For those using transit, the Regional Public Transportation Authority will provide transit tickets for your trip. For those using bicycles, please lock your bicycle in the bike rack in the garage.** Please call me at (602) 506-4760 if you have questions about the upcoming meeting.

Pursuant to Title II of the Americans with Disabilities Act (ADA), MAG does not discriminate on the basis of disability in admissions to or participation in its public meetings. Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting Gordon Tyus at the MAG Office at (602) 254-6300. Requests should be made as early as possible to allow time to arrange the accommodation.

The discussion time for individual cases will be limited to approximately 5 minutes per case. This limitation is due to the large number of active cases and is intended to provide an opportunity for all cases to be addressed. It is requested (not required) that written comments be prepared in advance for distribution at the meeting.

AGENDA

ITEM	COMMITTEE ACTION REQUESTED
1. Call to Order	1. No action required.
2. Approval of May 7, 2008 Meeting Minutes	2. Corrections and approval of May 7, 2008 minutes.
3. 2007 & 2008 Cases	3. Review of pending cases and submission of new cases for consideration.
4. General Discussion	4. For information and discussion.
5. Adjournment	5. No action required.

MEETING MINUTES FROM THE MARICOPA ASSOCIATION OF GOVERNMENTS STANDARD SPECIFICATIONS AND DETAILS COMMITTEE

May 7, 2008

Maricopa Association of Governments Office, Cholla Room
302 North First Avenue
Phoenix, Arizona

AGENCY MEMBERS

Jim Badowich, Avondale
Steven Borst, Buckeye
Warren White, Chandler
Dennis Teller, El Mirage
Kelli Kurtz, Gilbert
Tom Kaczmarowski, Glendale
Troy Tobiasson, Goodyear
Bob Herz, MCDOT
Gordon Haws, Mesa
* Jesse Gonzalez, Peoria
Jeff Van Skike, Phoenix (St. Trans.)
Larry Smith, Phoenix (Water)
Mark Palichuk, Queen Creek
* Rodney Ramos, Scottsdale
Loren Kelley, Surprise
James Bond, Tempe

ADVISORY MEMBERS

John Ashley, ACA
Jeff Benedict, AGC
Brian Gallimore, AGC
Peter Kandaris, SRP, Vice Chairman
James Carusone, ARPA
* Adrian Green, ARPA
Paul R. Nebeker, Independent
* William Ast, NUCA
Dale Phelan, NUCA

MAG ADMINISTRATIVE STAFF

Gordon Tyus

* Members not attending or represented by proxy.

GUESTS/VISITORS

Arturo Chavarria, Hansen Pipe and Precast

1. Call to Order

Chairman, Bob Herz, called the meeting to order at 1:34 p.m.

2. Approval of Minutes

The members reviewed the April 2, 2008 meeting minutes. Troy Tobiasson introduced a motion to accept the minutes as written. Jeff Van Skike seconded the motion. A voice vote of all ayes and no nays was recorded.

3. 2007 Cases (old cases)

a. **Case 07-02 – Revisions to Asphalt Concrete, Sections 321 and 710**: Major re-writes of Asphalt Concrete placement and materials Sections 321 and 710 as proposed by the Asphalt Paving Technical Committee (APTC). Jeff Benedict gave a progress report on the latest APTC meeting for resolving comments. Work on Section 321 is complete (copy provided in the handouts). APTC will work on Section 710 comments at the next meeting. APTC will meet at the ARPA offices (916 W. Adams Street, Phoenix) on May 15th at 11:30 a.m. to continue the work. Members were requested to review Section 321 and return with comments for the next meeting.

b. **Case 07-03A – PVC Catch Basins, Proposed New Details 535-2, 535-3, 537-2 & 539-2. Case 07-03B – Inlet Structures, Proposed New Details 542-1 through 4 & 543-1 through 5**: Details to allow the use of PVC catch basins and inlet structures. Revised details were provided to members in their packets that addressed all previous comments. Discussion by the committee included the potential for damage to PVC catch basins from fire and ultraviolet rays, appropriateness of PVC catch basins in the Right-Of-Way, and approval of PVC catch basins by other agencies. Dale Phelan will provide light and aging study information at the next meeting. Members were requested to discuss within their agencies their expected use of PVC catch basins.

c. **Case 07-08 – Revision to Section 615.2, Sewer Line Construction**: Provide water ponding tolerances inside sewer pipe. The committee had no discussion on this item. Mark Palichuk will prepare and update for the next meeting.

d. **Case 07-11 – Revision to Detail 370, Vertical Realignment of Water Mains**: Include an option for realignment of ductile iron mechanical joint. The committee had no discussion on this item. Jesse Gonzalez will have revisions for the next meeting.

e. **Case 07-12 – Revision to Detail 404-2, Water & Sanitary Sewer Separation/Protection**: Adding language to clarify the location of pipe and joint restraints to insure that fittings/couplings do not fail and create cross-contamination. The committee had no discussion on this item. Jesse Gonzalez will have revisions for the next meeting.

4. 2008 Cases (new cases)

a. **Case 08-01 – Revisions to Borrow Excavation, Section 210**: Defining acceptance criteria for import borrow material. Bob Herz provided revisions based on comments

from the last meeting. After discussion on the revisions, members were requested to be prepared to vote on this case at the next meeting.

b. **Case 08-02 – New Section 317, Asphalt Milling**: Construction requirements for milling existing asphalt concrete. Bob Herz provided revisions based on comments from prior meetings. Brian Gallimore recommended that wording be included to insure that the contractor not be responsible for damage to unknown below grade hazards as long as due diligence is performed during locating. Brian was requested to provide suggested language to define contractor due diligence for locating below grade milling hazards. Brian also asked that the new section requiring contractors prevent tearing and breakout of underlying or adjacent material be re-worded to define conditions so the contractor is only responsible when machine operation is at fault. Other discussion by the members noted that the section should include a requirement for electronic equipment controls, a requirement for clean straight edges and a discussion on damage caused by contractor negligence with an allowance for incidental concrete nicks and scratches. Bob will prepare revisions for the next meeting based on the discussions.

c. **Case 08-03 – New Section 325, Asphalt – Rubber Concrete Overlay, Gap Graded**: Material and construction requirements for gap-graded asphalt-rubber concrete used as an asphalt pavement. The committee had no discussion on this item. Bob Herz will prepare revisions for the next meeting based on earlier comments. Members were requested to continue reviewing the new section and provide any additional comments at the next meeting.

d. **Case 08-04 – New Details 180-1 & 180-2, Portable Water Tank Fill Pipe and Backflow Prevent Details**: Approved methods for filling portable water tanks and trucks. The committee had no discussion on this item. Warren White will prepare an update for the next meeting based on earlier comments. Members were requested to continue reviewing the details and provide any additional comments at the next meeting.

e. **Case 08-05 – Revisions to Safety Post Detail 140**: A revision to incorporate multiple agency safety post designs and include hazard marker requirements with the existing safety post detail. Peter Kandaris provided the SRP standard detail for removable safety poses as reference for use in the new detail. Warren White will prepare an update for the next meeting based on all comments received to date. Members were requested to continue reviewing the revisions and provide any additional comments at the next meeting.

f. **Case 08-06 – Modification to Storm Drain Construction, Section 618.3**: Additions to include leakage test procedures for HDPE storm drain pipes and require video inspection before final paving is allowed. Jeff Van Skike reviewed the case and stated that only HDPE and corrugated metal pipe should require leakage testing since few leakage problems have been encountered with concrete pipe. The committee discussed problems related to leaking HDPE pipes, noting that these problems may relate to confusion with the requirements for construction of water-tight versus soil-tight pipes.

Dale Phelan stated that properly installed water-tight HDPE pipe should not leak. Jeff Van Skike will prepare revisions based on the discussions from this and earlier meetings.

g. **Case 08-07 – Modification to Measurements and Payment, Section 109**: Revisions to better define compensation with change orders. Bob Herz requested additional revisions to the section to incorporate existing county supplemental specifications. Gordon Haws will review the suggested additions and provide modifications at the next meeting. Committee members were requested to continue reviewing the proposed changes and return with comments for the next meeting.

h. **Case 08-08 – Modification to Subgrade and Trench Compaction, Sections 301.3 and 601.4**: Revisions to modify subgrade compaction requirements and include tolerances for optimum moisture. Bob Herz requested additional revisions to section 301 to incorporate existing county supplemental specifications and Peter Kandaris provided suggested wording for compaction under various conditions. Tom Kaczmarowski recommended broadening the optimum moisture content tolerance to plus 2 percent to minus 4 percent to include a wider variety of soils types and provide more generic default values. Gordon Haws will review the suggested additions and provide modifications at the next meeting. Committee members were requested to continue reviewing the proposed changes and return with comments for the next meeting.

i. **Case 08-10 – Modification to Trench Backfill and Pavement Replacement, Detail 200, Section 336 and Section 601**: Revisions to eliminate numerous agency trench backfill and pavement replacement supplemental details by combining the most common practices. The committee had no discussion on this item. Committee members were encouraged to review the proposal and return with comments for the next meeting.

j. **Case 08-11 – Revisions to Driveway Entrance Detail 250**: Changes to make sidewalk installations in driveway entrances ADA compliant. The committee had no discussion on this item. Bob Herz will prepare an update for the next meeting based on earlier comments. Members were requested to continue reviewing the new section and provide any additional comments at the next meeting.

k. **Case 08-12 – New Section 331, Microsealing, and Section 714, Microsurfacing Materials**: New sections for pavement microsurfacing materials and placement. The committee had no discussion on this item. Committee members were requested to continue reviewing the new sections and return with comments for the next meeting.

l. **Case 08-13 – Modification to Manhole, Valve Box and Water Meter Box Adjustments, Section 345**: Revisions to require contractors be responsible for locating utilities during surface improvement projects to insure adjustments are performed. Bob Herz recommended changing the wording in the first sentence as follows "The contractor ~~responsible for the surface improvement, i.e., concrete and/or asphalt paving,~~ shall ~~also~~ be responsible for the careful identification and location of all utility devices requiring ~~future~~ adjustment within the new pavement section, including manholes, water valves, sewer clean-outs, vaults, etc." Discussion followed pertaining to problems encountered

with utility identification and marking for developer/permit work when various contractors are working independently for developers. The members discussed other items including clarifying or defining the term "surface improvement" and broadening the wording for described locating devices to include allow any appropriate method. Jeff Van Skike will prepare an update for the next meeting based on the comments. Members were requested to continue reviewing the new section and provide any additional comments at the next meeting.

m. **Case 08-14 – Revisions to Utility Pothole Repair Detail 212**: Revision to MAG Detail 212 to allow multiple backfill and asphalt concrete materials for repair of utility potholes. Jeff Van Skike summarized the case. Peter Kandaris provided a handout showing the advantages and disadvantages of various pothole backfill material options. The members discussed bedding requirements around utilities and agreed that asphalt replacement should be at least 6 inches thick or match existing, whichever is greater. Jeff Van Skike will prepare an update for the next meeting based on the comments. Members were requested to continue reviewing the new section and provide any additional comments at the next meeting.

5. General Discussion:

Bob Herz stated that the last meeting this year for presenting new cases will be July 2nd.

John Ashley gave a summary report on the progress of the supplement reduction work group. He also requested that agencies report when they have modified their supplements to reduce or eliminate agency-specific requirements.

John Ashley announced that the concrete modernization working group will next meet at 1:30 pm on Wednesday, May 14th at the ARPA offices (916 W. Adams Street, Phoenix).

Jeff Benedict commented about possible impacts on pavement material availability from rising prices in the asphalt/oil market. He noted that current dramatic oil price increases are driving an effort to evaluate recycling old asphalt concrete pavement into new hot mixes. Jeff noted that agencies may need to develop policies for the use of these materials.

Dale Phelan announced that Advanced Drainage Systems is sponsoring a seminar on the how HDPE underground products can be used in project designs that are eligible for LEED (Leadership in Energy and Environmental Design) credits. Dale will email a flyer on the seminar to all committee members.

6. Adjournment:

The meeting was adjourned at 3:13 p.m.

2008 PROPOSED REVISIONS TO MAG SPECIFICATIONS AND DETAILS

(Updated information can be found on the website: http://www.mag.maricopa.gov/detail.cms?item=8497)

CASE	DESCRIPTION	PROPOSED BY	MEMBER	SUBMITTAL DATE Last Revision	VOTE DATE	VOTE
07-02	Revision/ Re-Write Section 710 & Section 321	AGC ARPA	Jeff Benedict (Don Green)	2/07/2007 4/10/2008		0 Yes 0 No 0 Abstain
07-03 A	PVC Catch Basins - New Details 535-2, 535-3, 537-2, 539-2	NUCA	Dale Phelan	2/07/2007 4/09/2008		0 Yes 0 No 0 Abstain
07-03 B	PVC Inlet Structures - New Details 542-1, 542-2, 543-1, 543-2, 543-3.	NUCA	Dale Phelan	2/07/2007 4/09/2008		0 Yes 0 No 0 Abstain
07-08	Revision to Section 615 Sewer Line Construction – Clarify tolerances for pipe versus trench bottom.	Queen Creek	Mark Palichuk (Gerald Wright)	5/02/2007 8/01/2007		0 Yes 0 No 0 Abstain
07-11	Revision to Detail 370, Vertical Realignment of Water Mains	Peoria	Jesse Gonzalez	6/06/2007		0 Yes 0 No 0 Abstain
07-12	Revision to Detail 404-2, Water & Sanitary Sewer Separation/Protection	Peoria	Jesse Gonzalez	6/06/2007		0 Yes 0 No 0 Abstain
08-01	Revision to Section 210 Borrow Excavation	MCDOT	Bob Herz	1/02/2008 5/07/2008	Proposed vote 6/04/2008	0 Yes 0 No 0 Abstain
08-02	New Section 317, Asphalt Milling	MCDOT	Bob Herz	5/08/2008		0 Yes 0 No 0 Abstain
08-03	New Section 325, Asphalt – Rubber Concrete Overlay, Gap Graded	MCDOT	Bob Herz	1/02/2008		0 Yes 0 No 0 Abstain
08-04	New Details 180-1 and 180-2, Portable Water Tank Fill Pipe and Backflow Prevent Details	Chandler	Warren White (David Fern)	1/02/2008		0 Yes 0 No 0 Abstain
08-05	Revisions to Safety Post Detail 140	Chandler	Warren White (David Fern)	1/02/2008 4/01/2008		0 Yes 0 No 0 Abstain

2008 PROPOSED REVISIONS TO MAG SPECIFICATIONS AND DETAILS

(Updated information can be found on the website: http://www.mag.maricopa.gov/detail.cms?item=8497)

CASE	DESCRIPTION	PROPOSED BY	MEMBER	SUBMITTAL DATE Last Revision	VOTE DATE	VOTE
08-06	Revision to Section 618.3 Construction Methods, add Leakage Test Procedures for HDPE Storm Drain Pipe.	Phoenix	Jeff Van Skike	2/06/2008 2/06/2008		0 Yes 0 No 0 Abstain
08-07	Revisions to Section 109.4 Compensation for Alteration of Work	Mesa	Gordon Haws	2/06/2008 4/02/2008		0 Yes 0 No 0 Abstain
08-08	Revisions to Section 301.3 Relative Compaction and Section 601.4 Foundation, Bedding, Backfilling and Compaction concerning optimum moisture and percent compaction.	Mesa	Gordon Haws	2/06/2008 4/02/2008		0 Yes 0 No 0 Abstain
08-09	~~Revisions to Section 625.3.1 Manholes~~	~~Mesa~~	~~Gordon Haws~~	~~2/06/2008~~ ~~4/02/2008~~	Case Withdrawn 4/02/2008	0 Yes 0 No 0 Abstain
08-10	Detail 200 and Sections 336 and 601 – Trench backfill and pavement Replacement	SRP	Peter Kandaris	2/06/2008 4/02/2008		0 Yes 0 No 0 Abstain
08-11	Revisions to Detail 250 DRIVEWAY ENTRANCES	MCDOT	Bob Herz	3/05/2008		0 Yes 0 No 0 Abstain
08-12	New Section 331, Microseal Specifications New Section 714, Microsurfacing Materials	Phoenix	Jeff Van Skike	3/05/2008 4/02/2008		0 Yes 0 No 0 Abstain
08-13	Revision to Section 345 Adjusting Frames, Covers, Valve Boxes and Water Meter Boxes	Phoenix	Jeff Van Skike	3/05/2008		0 Yes 0 No 0 Abstain
08-14	Revision to Detail 212 UTILITY POTHOLE REPAIR	Phoenix	Jeff Van Skike	4/02/2008		0 Yes 0 No 0 Abstain
						0 Yes 0 No 0 Abstain

* Case was approved with verbal modifications at time of voting.

CASE 07-02

ASPHALT CONCRETE

Revised 5-19-08

710.1 GENERAL:

Asphalt concrete shall be a mixture of asphalt cement and mineral aggregates. Mineral admixture shall be included in the mixture when required by the mix design or by the Engineer. Asphalt concrete shall be produced in accordance with Section 321.

The designation for asphalt concrete mixes shall be based on the nominal maximum aggregate size of the mix. The applicable mix designations are 3/8 inch, ½ inch, ¾ inch and Base mix.

Each mix shall be designed using Marshall or Gyratory compaction methods. Marshall mixes may be used for low or high traffic conditions, while Gyratory mixes are recommended for only high traffic conditions. Low traffic conditions are conditions where the asphalt mix will be subject to low volume and low weight vehicle usage. Examples of this condition are residential streets, most parking lots and residential minor collector streets. High traffic conditions are conditions where the asphalt mix will be subject to high volume and/or heavy weight vehicle usage as found on major collector, arterial and commercial streets. Street classifications (i.e. minor collector and major collector shall be determined by the specifying agency).

The following table (Table 710-1) displays the recommended lift thickness for various asphalt concrete mix designations found within Section 710. Please note that these recommended lift thicknesses are minimums based on each mix designation's "Nominal Aggregate Size" and the relative coarseness of its gradation. The compacted thickness of layers placed shall not exceed 150% of the Design Target Lift Thickness of Table 710-1 except as otherwise provided in the plans and specifications, or if approved in writing by the Engineer.

TABLE 710-1

RECOMMENDED MINIMUM LIFT THICKNESS'S for ASPHALT CONCRETE MIXES

Designation (inches)	Target Lift Thickness Marshall Mixes	Target Lift Thickness Gyratory Mixes
3/8"	1.0 inches	1.5 inches
1/2"	1.5 inches	2.0 inches
3/4"	2.5 inches	3.0 inches
Base	3.0 inches	n/a

710.2 MATERIAL:

710.2.1 Asphalt Binder: The asphalt binder specified in this section has been developed for use in desert climate conditions. Should it be utilized in other climates, consideration should be given to adjustments in the asphalt binder selection. The asphalt binder shall be Performance Grade Asphalt conforming to the requirements of Section 711 for PG 70-10, unless otherwise approved by the Engineer or specified differently in the plans or special provisions.

710.2.2 Aggregate: Coarse and Fine aggregates shall conform to the applicable requirements of this section. Coarse mineral aggregate shall consist of crushed gravel, crushed rock, or other approved inert material with similar characteristics, or a combination thereof, conforming to the requirements of these specifications.

Coarse aggregate for hot mix asphalt is material retained on or above the No. 4 sieve and Fine aggregate is material passing the No. 4 sieve. Aggregates shall be relatively free of deleterious materials, clay balls, and adhering films or other material that prevent coating with the asphalt binder. Coarse and Fine aggregates shall conform to the following requirements when tested in accordance with the applicable test methods.

TABLE 710-2

COARSE/FINE AGGREGATE REQUIREMENTS

Characteristics	Test Method	Low Traffic	High Traffic
Fractured Faces, % (Coarse Aggregate Only)	Arizona 212	75, 1 or more	85, 1 or more 80, 2 or more
Uncompacted Voids, % Min.	AASHTO T-304, Method A	42	45
Flat & Elongated Pieces, % 5:1 Ratio	ASTM D-4791	10.0 Max.	10.0 Max.
Sand Equivalent, %	AASHTO T-176	50 Min.	50 Min.
Plasticity Index	AASHTO T-90	Non-plastic	Non-plastic
L.A. Abrasion, %Loss	AASHTO T-96	9 max. @ 100 Rev. 40 max. @ 500 Rev.	9 max. @ 100 Rev. 40 max. @ 500 Rev.
Combined Bulk Specific Gravity	AI MS-2/SP-2	2.35 – 2.85	2.35 – 2.85
Combined Water Absorption	AI MS-2/SP-2	0 – 2.5%	0 – 2.5%

Tests on aggregates used in asphalt concrete outlined above, shall be performed on materials furnished for mix design purposes and composited to the mix design gradation.

Blend sand (naturally occurring or crushed fines) shall be clean, hard and sound material which will readily accept asphalt binder coating. The blend sand grading shall be such that, when it is mixed with the other mineral aggregates, the combined product shall meet the requirements of Table 710-2.

The natural sand shall not exceed 20 percent for the Marshall mixes and 15 percent for the Gyratory mixes by weight of the total aggregate for a mix.

710.2.3 Mineral Admixture: Mineral admixture when used as an anti-stripping agent in asphalt concrete shall conform to the requirements of AASHTO M-17. Mineral admixture used in asphalt concrete shall be dry hydrated lime, conforming to the requirements of ASTM C-1097 or Portland cement conforming to ASTM C 150Type II or ASTM C 595 Type IP. The amount of hydrated lime or Portland cement used shall be determined by the mix design. The minimum Mineral admixture content within a mix will be 1.00 percent, by weight of total aggregate.

710.3 MIX DESIGN REQUIREMENTS:

710.3.1 General: The mix design for asphalt concrete shall be prepared by a laboratory that is accredited through the AASHTO Accreditation Program (AAP) in Hot Mix Asphalt Aggregates and Hot Mix Asphalt. The laboratory shall be under the direct supervision of a Civil Engineer, registered by the State of Arizona, and who is listed by ADOT as a "Qualified Asphaltic Concrete Mix Design Engineer" within ADOT's latest list of approved laboratories. The latest list of approved laboratories is available on ADOT's web page www.azdot.gov. The date of the design shall not be older than two years from the date of submittal, unless supportive documentation is provided and approved by the Engineer.

The mix design report shall include the following elements as a minimum.

(1) The name and address of the testing organization and the person responsible for the mix design report.

(2) The mix plant identification and/or location, as well as the supplier or producer name.

(3) A description of all products that are incorporated in the asphalt concrete along with the sources of all products, including admixtures and asphalt binder, and their method of introduction.

(4) The supplier and grade of asphalt binder, the source and type of mineral aggregate, and the percentage of asphalt binder and mineral admixture used.

(5) The mix design report shall state the traffic condition (low or high traffic) and size designation. In all cases Gyratory based mix designs shall be designated as high traffic mixes. Marshall based mix design shall be designated either low or high traffic mixes.

(6) The results of all testing, determinations, etc., such as: specific gravity and gradation of each component, water absorption, sand equivalent, loss on abrasion, fractured coarse aggregate particles, Tensile Strength Ratio (AASHTO T 283), Marshall stability and flow, asphalt absorption, percent air voids, voids in mineral aggregate, and bulk density. Historical abrasion values may be supplied on existing sources. The submittal should include a plot of the gradation on the Federal Highway Administration's 0.45 Power Gradation Chart, plots of the compaction curves and the results of moisture sensitivity testing.

(7) The laboratory mixing and compaction temperature ranges for the supplier and grade of asphalt binder used within the mix design.

(8) A specific recommendation for design asphalt binder content and any limiting conditions that may be associated with the use of the design, such as minimum percentages of crushed or washed fine aggregate.

(9) The supplier's product code, the laboratory Engineer's seal (signed and dated), and the date the design was performed.

The mix design shall be submitted to the Agency or Engineer by the Contractor/Supplier for which it was developed as part of his project submittals. Once the mix design has been approved by the agency or Engineer, the Contractor and/or his supplier shall not change plants nor utilize additional mixing plants without prior approval of the Engineer. Any changes in the plant operation, the producer's pit, the asphalt binder, including modifiers in the asphalt binder, or any other item that will cause an adjustment in the mix, shall be justification for a new mix design to be submitted.

710.3.2 Mix Design Criteria: The mix design shall be performed by one of two methods, Marshall Mix Design or Gyratory Mix Design. The method shall be specified on the plans, special provisions, or by the Engineer. A minimum of 4 points will be used to establish the mix design results. The oven aging period for both Marshall and Gyratory mix design samples shall be 2 hours.

710.3.2.1 Marshall Mix Design: The Marshall Mix Design shall be performed in accordance with the requirements of the latest edition of the Asphalt Institute's Manual, MS-2 "Mix Design Methods for Asphalt Concrete." The mix shall utilize the compactive effort of 75 blows per side of specimen. The mix shall comply with the criteria in Table 710-3.

TABLE 710-3
MARSHALL MIX DESIGN CRITERIA

Criteria	Requirements				Designated Test Method
	3/8" Mix	1/2" Mix	3/4" Mix	Base Mix	
1. Voids in Mineral Aggregate: %, min	15.0	14.0	13.0	12.0	AI MS-2
2. Effective Voids: %, Range	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	AI MS-2
3. Absorbed Asphalt: %, Range *	0 - 1.0	0 - 1.0	0 - 1.0	0 - 1.0	AI MS-2
4. Dust to Eff. Asphalt Ratio, Range **	0.6 – 1.4	0.6 – 1.4	0.6 – 1.4	0.6 – 1.4	AI MS-2
5. Tensile Strength Ratio: %, Min.	60	60	60	60	AASHTO T-283
6. Dry Tensile Strength: psi, Min.	100	100	100	100	AASHTO T-283
7. Stability: pounds, Minimum	2,000	2,500	2,500	3000	AASHTO T-245
8. Flow: 0.01-inch, Range	8 - 16	8 - 16	8 – 16	8 – 16	AASHTO T-245
9. Mineral Aggregate Grading Limits					AASHTO T-27

Sieve Size	Percent Passing with Admix			
	3/8 inch Mix	1/2 inch Mix	3/4 inch Mix	Base Mix
1-1/4 inch				100
1 inch			100	90-100
3/4 inch		100	90 – 100	85-95
1/2 inch	100	85 – 100	---	---
3/8 inch	90-100	62 – 85	62 – 77	57-72

No. 8	45-60	40 – 50	35 – 47	33-43
No. 40	10-22	10 – 20	10 – 20	9-18
No. 200	2.0 – 10.0	2.0 – 10.0	2.0 – 8.0	1.0 – 7.0

* Unless otherwise approved by the Engineer.

** The ratio of the mix design composite gradation target for the No. 200 sieve, including admixture, to the effective asphalt content shall be within the indicated range.

710.3.2.2 Gyratory Mix Design: Gyratory Mix Designs shall be performed in accordance with the requirements of latest edition of the Asphalt Institute's SP-2 manual. Mix design laboratory compacted specimens shall be prepared using a gyratory compactor in accordance with AASHTO T-312.

The mix design shall be formulated in a manner described for volumetric mix designs in the current edition of the Asphalt Institute Manual SP-2, except the number of trial blend gradations necessary will be determined by the mix design laboratory. Duplicate gyratory samples shall be prepared at a minimum of four (4) binder contents to select the recommended binder content. The completed mix design shall meet all the mineral aggregate and mix design criteria specified herein.

For purposes of design, the number of gyrations shall be 8 for Nini, 100 for Ndes, and 160 for Nmax. The corrected density of the specimens shall be less than 89.0 percent of maximum theoretical density at 8 gyrations. The corrected density of the specimens shall be less than 98.0 percent of maximum theoretical density at 160 gyrations.

The Gyratory mix shall comply with the criteria in Table 710-4.

TABLE 710-4
GYRATORY MIX DESIGN CRITERIA

Criteria	**Requirements**			**Designated Test**
	3/8" Mix	**1/2" Mix**	**3/4" Mix**	**Method**
1. Voids in Mineral Aggregate: %, Min.	15.0	14.0	13.0	AI SP-2
2. Effective Voids: %, Range	4.0 ± 0.2	4.0 ± 0.2	4.0 ± 0.2	AI SP-2
3. Absorbed Asphalt: %, Range *	0 - 1.0	0 - 1.0	0 - 1.0	AI SP-2
4. Dust to Eff. Asphalt Ratio, Range **	0.6 – 1.4	0.6 – 1.4	0.6 – 1.4	AI SP-2
5. Tensile Strength Ratio: %, Min.	70	70	70	AASHTO T-283
6. Dry Tensile Strength: psi, Min.	75	75	75	AASHTO T-283
7. Mineral Aggregate Grading Limits				AASHTO T-27
	Percent Passing with Admix			
Sieve Size	**3/8 inch Mix**	**1/2 inch Mix**	**3/4 inch Mix**	
1 inch			100	
3/4 inch		100	90-100	
1/2 inch	100	90-100	43-89	
3/8 inch	90-100	53-89	-	
No. 8	32-47	29-40	24-36	
No. 40	2-24	3-20	3-18	
No. 200	2.0-8.0	2.0-7.5	2.0-6.5	

* Unless otherwise approved by the Engineer.
** The ratio of the mix design composite gradation target for the No. 200 sieve, including admixture, to the effective asphalt content shall be within the indicated range.

710.3.2.3 Moisture Sensitivity Testing: Moisture sensitivity testing will be performed in accordance with AASHTO Test Method T-283 for both Marshall and Gyratory mix designs, without the freeze/thaw cycle(s). The minimum required Tensile Strength Ratio is indicated in the tables above.

MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: January 2, 2008 – Revised 5/7/2008

To: MAG Specifications and Details Committee

From: Robert Herz, MCDOT Representative

Subject: Modification to Section 210 BORROW EXCAVATION **Case 08- 01**

PURPOSE: Define acceptance criteria for imported borrow material.

REVISION: Add paragraph and revisions as noted.

210.2 IMPORTED BORROW:

Imported borrow shall consist of material required for construction and unless otherwise designated in the special provisions, the Contractor shall make ~~his own~~ arrangements for obtaining imported borrow and ~~he~~ shall pay all costs involved. When designated sources for imported borrow ~~shall be obtained from sources~~are indicated on the plans~~, designated~~ or in the special provisions, the material shall be assumed ~~or~~ approved by the Engineer unless indicated otherwise.

Borrow material for fill construction shall meet the following requirement:

The Plasticity Index (PI) (AASHTO T90) and the percent passing the number 200 sieve (Minus 200) (ASTM C136) when used in the equation below, shall give a value of X that does not exceed 62.

$$X = (\text{Minus } 200) + 2.83\,(PI)$$

When the percentage of the Minus 200 material is greater than 30, the PI for the soil shall be at least 5 and at the same time incompliance with the X value requirement.

The material shall be free from wood, vegetation, or other deleterious matter. The maximum size of this material shall not be greater than 2/3 the compacted thickness of the course placed in the subgrade.

The Contractor shall notify the Engineer sufficiently in advance of opening any material sites so that cross section elevations and measurements of the ground surface after stripping may be taken and sufficient time for testing and material will be allowed.

Borrow pits shall be excavated to regular lines to permit accurate measurement; depth of excavation throughout the area of borrow pits shall be as uniform as practicable and the side slope shall be dressed to such slope as may be directed, leaving the borrow pit area in a clean and safe condition.

2901 West Durango Street Phoenix, Arizona 85009 Phone: 602-506-4760 Fax: 602-506-5969

MARICOPA COUNTY
Department of Transportation

MEMORANDUM

Date: January 2, 2008 – Revised 5/7/2008 (shown in red)

To: MAG Specifications and Details Committee

From: Robert Herz, MCDOT Representative

Subject: 317 Asphalt Milling **Case 08- 02**

PURPOSE: Incorporate specifications from MCDOT's Supplement into the MAG specifications as requested by the MAG Standards & Details Consolidation Subcommittee.

REVISION: Add to Part 300: Section 317 Asphalt Milling.

SECTION 317

ASPHALT MILLING

317.1 DESCRIPTION:

The work under this Section shall consist of milling existing asphalt concrete pavement where shown on the Plans or requested by the Engineer.

317.2 CONSTRUCTION REQUIREMENTS:

Contractor is responsible for locating all milling hazards on and below the surface within the area to be milled including areas requiring special milling. Special milling is not a separate pay item and shall be paid for as Asphalt Milling.

The milling cut depth shall be the depth indicated on the Plans plus or minus 1/8 inch. The milling machine shall have sufficient power, traction and stability to maintain an accurate depth of cut and prevent tearing and breaking out of underlying and adjacent material. Contractor shall remove the milled material and sweep the roadway clean with a power pick-up broom to the satisfaction of the Engineer.

Asphalt pavement adjacent to manholes, valve boxes, small radius curbs and other fixed objects that produce confined areas shall be removed with milling equipment specifically designed to operate in restricted areas. The equipment shall be capable of

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removing asphalt concrete of the specified thickness without damage to, or displacement of, the adjacent object(s).

The work shall result in a clean milled surface to the specified depth for the area indicated by the construction documents including the areas immediately around and next to any individual hazard within the area to be milled.

The Contractor shall be responsible for continually checking the milling operation to determine that the proper depth of milling has been achieved, that the proper profile and cross slope are achieved, and that the surface texture is (a) free from longitudinal ridges, and (b) has a uniform pattern.

The Contractor shall immediately notify the Engineer when:

- The existing pavement thickness is found to be less than anticipated and breaking of the underlying material occurs.
- Delamination of underlying material occurs.

317.3 MEASUREMENT AND PAYMENT:

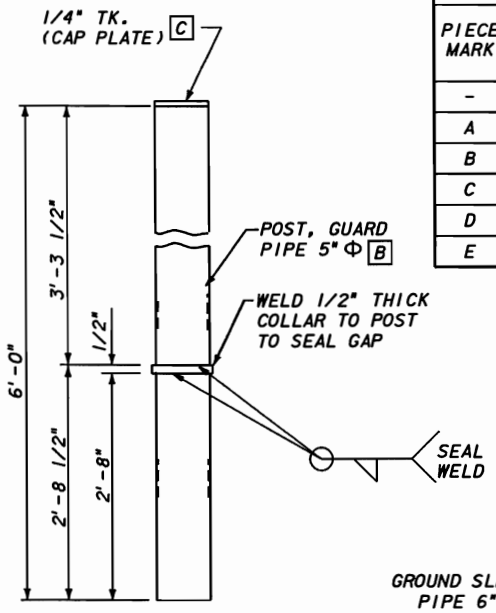
Measurement for Asphalt Milling will be by the square yard and shall only include areas milled to the required depth and cross section.

Payment for Asphalt Milling at the contract unit price shall be full compensation for the work, complete-in-place, including all asphalt milling, milling around structures, removal and disposal of milled materials, and sweeping.

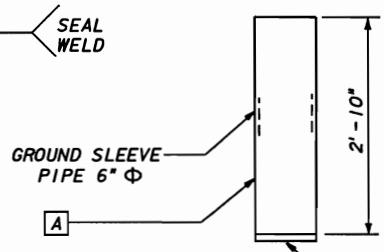
Example Submitted for Case 08-05

GF0213.dgn

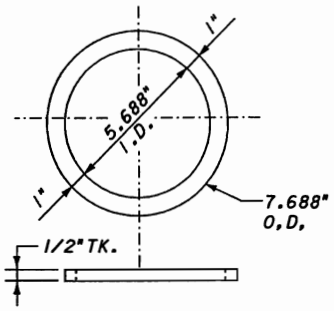
MATERIAL LIST				
PIECE MARK	REQUIRED	DESCRIPTION	LENGTH FEET	LENGTH INCHES
-	-	APPROXIMATE WEIGHT EACH ASSEMBLY - 152 POUNDS	-	-
A	1	PIPE 6" DIAMETER (SCHEDULE 40)	2	10
B	1	PIPE 5" DIAMETER (SCHEDULE 40)	6	0
C	1	PLATE 1/4" X 5 3/16" DIAMETER	-	-
D	1	PLATE 1/4" X 6 3/16" DIAMETER	-	-
E	1	REFLECTIVE TAPE 3" WIDE MINIMUM (SRP STK. CODE NO. 25-4310)	12	0



POST/COLLAR DETAIL

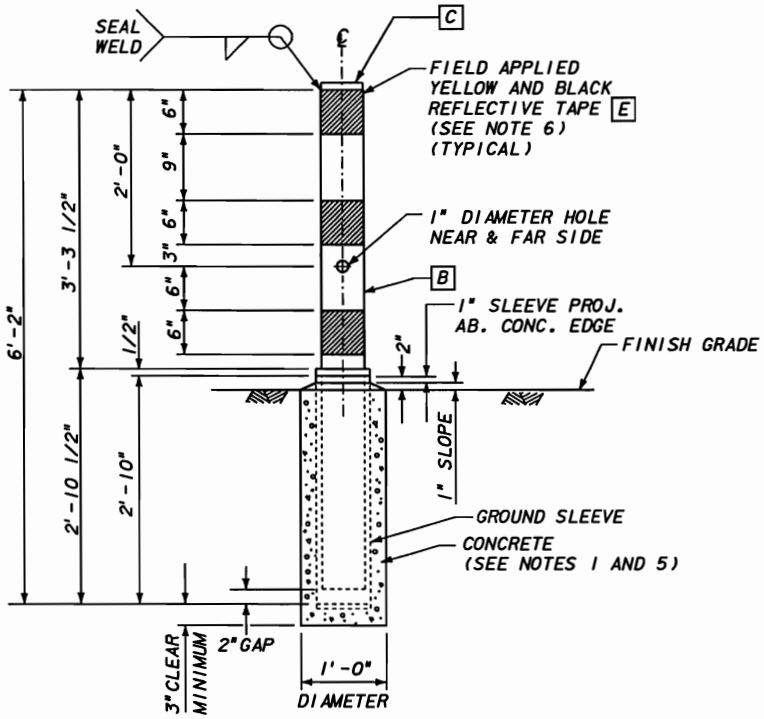


GROUND SLEEVE



COLLAR DETAIL

(SHOP TO OBTAIN COLLAR MATERIAL, ASTM A-36)



ELEVATION VIEW

NOTES:

1. CONCRETE PLACEMENT SHALL BE PER SRP 03.305.
2. ALL STEEL FABRICATION SHALL BE PER CES-05500-001.
3. FOR QUANTITY AND LOCATION SEE FOUNDATION PLAN(S).
4. POST (OUTSIDE) AND SLEEVE (INSIDE & OUTSIDE) SHALL BE METALLIZED (ZINC-SPRAYED), GALVANIZED OR PAINTED (2 COATS OF ZINC RICH PRIMER, APPROVED BY ENGINEER). IF GALVANIZED, PROVIDE DRAIN HOLES IN PLATES C AND D. HOLES TO BE PLUGGED AFTER GALVANIZING.
5. CONCRETE COMPRESSIVE STRENGTH SHALL BE 2500 PSI MINIMUM AT 28 DAYS. MIX DESIGN SHALL BE PER SRP 03.300.
6. SRP, MCM OR CONTRACTOR (IF APPLICABLE) TO INSTALL REFLECTIVE TAPE, 3" WIDE (MINIMUM) WITH ALTERNATE DIAGONAL YELLOW AND BLACK SAFETY STRIPES, (STOCK CODE #25-4310). OPTIONAL (IF SPECIFIED ONLY) FINISH IS REFLECTIVE (GLOSS) YELLOW AND BLACK PAINT. (SEE PAINT SPEC SD40.50)
7. SHOP TO GRIND SMOOTH ALL SHARP EDGES.

REFERENCES

STANDARD SPECIFICATION FOR CONCRETE ____ SRP 03.300
STANDARD SPECIFICATION FOR PLACEMENT OF CONCRETE ____ SRP 03.305
STEEL FABRICATION AND ERECTION NOTES FOR SUBSTATION STRUCTURES ____ CES-05500-001

REVISIONS

REV NO	DATE	DFTR	CHKR	ENGR CHK	SUPV APPD	ISSUE AUTH
INITIAL ISSUE.						
0	9/90	PM	——	WRS	WRS	WRS
ADDED COLLAR TO SEAL EDGE OPENING						
2	04/95	DMG	——	WRS	WRS	WRS
REVISED COLLAR MAT'L FROM PIPE SECTION TO 1/2"TK. PLATE.						
4	04/04	DMG	---	WRS	WRS	WRS

SRP

GF02.13

ELECTRIC SUBSTATION CONSTRUCTION STANDARDS

REMOVABLE GUARD POST

DWG SIZE 17 X 22

CES-02610-002

GF0213.dgn

Comments for CASE 08-07

Case 08-07 Maricopa County request the following revisions to section 109 be added to the proposed case revisions:

SECTION 109

MEASUREMENTS AND PAYMENTS

109.2 SCOPE OF PAYMENT, add the following:

109.2.1 Scope of Payment:

The "COMPLETE IN PLACE" rate shall include but not necessarily be limited to all labor, material and equipment costs for preparation, installation, construction, modification, alteration or adjustment of the items, which shall include all costs for salaries and wages, all payroll additives to cover employee benefits, allowances for vacation and sick leave, company portion of employee insurance, social and retirement benefits, all payroll taxes, contributions and benefits imposed by any applicable law or regulation and any other direct or indirect payroll-related costs. The rate shall also include but not necessarily be limited to all costs for indirect charges or overhead, mileage, travel time, subsistence, materials, freight charges for material to Contractor's facility or project site, equipment rental, consumables, tools, insurance to the levels specified in Section 103.6, CONTRACTOR'S INSURANCE, all applicable taxes, as well as Contractor's fee and profit. This rate shall further include all site clean-up costs and hauling of construction debris to disposal sites designated by the Engineer.

109.2.2 Payment

Payment will be made for only those items listed in the proposal and will not be made in accordance with the measurement and payment provisions of the Uniform Standard Specifications where those provisions differ from the items listed in the proposal. All materials and work necessary for completion of the project are included in proposal items. Work or materials not specifically identified by a proposal item are considered as included in the unit price of related proposal items.

Payment will not be made for unused materials.

109.2.3 Sales Tax

It is the Contractor's responsibility to contact all municipalities in the area to determine if they will charge Contractor sales taxes or any other fees for project work. Any such taxes or fees shall be paid by Contractor.

109.4 COMPENSATION FOR ALTERATION OF WORK

Revise the first sentence of Section 109.4.1 (B) to read "For an increase greater than 20 percent in either the total cost of the contract or the total cost of a major item, any adjustment made will only apply to that cost in excess of 120 percent of the original extended unit price bid."

Section 109.10 is added as follows:

109.10 MOBILIZATION/DEMOBILIZATION

The Agency will compensate Contractor for one-time, round trip mobilization /demobilization of Contractor's personnel, equipment, supplies and incidentals, establishment of offices, buildings and other facilities required for the performance of the work on the project, as well as preparatory work and operations prior to the commencement of the work on the project site.

Mobilization/demobilization will be measured for payment by the lump sum as a single complete unit of work.

Payment for mobilization/demobilization, measured as provided above, will be made at the contract lump sum price. Payment shall be made in equal one-third portions. The first payment will be paid with Contractor's initial billing. The second payment will be made when the total payments to the Contractor for the pay items, exclusive of payments for mobilization/demobilization, equals one-half of the initial contracted amount, exclusive of mobilization/demobilization. The remaining one-third will be paid as part of the final payment due Contractor.

When other contract items are adjusted as provided in Section 109, and if the costs applicable to such items of work include mobilization costs, such mobilization costs will be considered as recovered by Contractor in the lump sum price paid for mobilization, and will be excluded from consideration in determining compensation under Section 109.

If the Contractor performs a second mobilization/demobilization of personnel, material and/or equipment at the Engineer's express written request, the Agency will compensate the Contractor for such expenses at the Contractor's actual costs. The Contractor shall provide all documentation for these costs at the request of the Engineer.

COMMENTS FOR CASE 08-08

Case 08-08 Maricopa County request the following revisions to section 301 be added to the proposed case revisions:

SECTION 301

SUBGRADE PREPARATION

Section 301 add the following:

301.2 Preparation of Subgrade: Subgrade preparation shall also include preparing subgrade to required line and grade for paved or unpaved shoulders, tapers, turnouts, and driveways, and all project locations where aggregate base and/or select material courses are used in accordance with the Project Plans.

301.2.1 The Contractor may use removed existing asphalt concrete and other existing bituminous roadway surfacing materials, originating on the project site, as embankment fill. All materials used shall be thoroughly crushed to sizes not exceeding four inches, or as approved by the Engineer. These asphalt/bituminous materials shall be placed not less than two feet below subgrade elevation.

Project earthwork quantities when included as separate contract pay items will include removed asphalt/bituminous material volumes, unless otherwise specified in the Special Provisions.

All unsuitable material and all excess material shall be disposed of in accordance with the requirements of Sections 205.2 and 205.6, respectively. When additional material is required for fill, it shall conform to Section 210.

301.3 RELATIVE COMPACTION:

Rock 6 inches or greater that becomes exposed due to scarification shall be removed from the scarified subgrade.

(E) Graded Shoulders.....95 percent

301.7 MEASUREMENT:

Measurement for Subgrade Preparation will be by the square yard. The area to be measured will be the total accepted area of new asphalt or Portland cement pavement, including paved shoulders, tapers, and turnouts, and unpaved roadway shoulders. Measurement will also include driveways that are paved or are surfaced with aggregate base or select materials. The area under concrete curb and gutter, sidewalk, concrete driveway entrances, and concrete alley entrances will not be measured for this pay item.

Project earthwork quantities for Roadway Excavation, Borrow Excavation, and Fill Construction shall not be measured when they are all omitted from the fee schedule. Payment for the above earthwork items shall be included in the unit price for Subgrade Preparation.

COMMENTS ON CASE 08-14

MEMORANDUM

Date: 5/7/08

To: MAG Specifications and Details Committee

From: Peter Kandaris

Re: MAG Case 08-14 – Comments on Utility Pothole Repair

Options for pothole backfill include the following:

- Controlled Low Strength Material (CLSM): ½-sack and 1-sack cement CLSM are reasonably easy to excavate, do not have significant settlement problems, are more compatable with surrounding soil and base elastic modulus values, and can be paved within a short time for a pothole-sized repair area. Higher cement contents could be more difficult for future excavation and will give a localized high elastic modulus (could act like a concrete post in the ground). Options for pothole repair include reducing water content to increase slump, thus reducing the time to pave. Concerns about consolidation could be remedied by vibrating a low slump mix in place.

- Aggregate Slurries: Washed concrete aggregate slurry (ASTM C33 #67 coarse aggregate with ASTM C33 fine aggregates at an approximate 50%:50% ratio) can consistently achieve a minimum 90% standard proctor density placed as a slurry. With vibration, this density can increase to above 95% of standard proctor values.

- Sand-Cement Slurries: Washed sand meeting the fine aggregate requirements of ASTM C33 blended with cement. Minimum cement content of 7% is required to achieve any reasonable strength (approximately 2-sacks cement per cubic yard). Set time can be a problem with cement contents under 10% to 12%. Vibration with reduced cement content can aid in set time and density, but not as effective as aggregate slurries.

- Compacted ABC: Lift thicknesses must be limited to a few inches and compaction done with down hole pneumatic rams. Moisture must be controlled. This is a standard pothole repair method for most agencies.

- Native soil: Lift thicknesses and maximum rock size must be limited and compaction done with down hole pneumatic rams. The committee opted to eliminate this method a few years ago because of settlement problems.

It is recommended that utility locating companies be contacted to provide input on the methods and materials they have available for repairing potholes. Their input can be used to create a specification that will meet both agency and contractor needs. Discussions with these contractors may help determine the best types of equipment and materials to be carried on trucks that will allow optimal material placement with minimal street impacts.